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NOTICE OF ALLOWANCE AND FEE(S) DUE

28848

7590

07/12/2004

TOPE-MCKAY & ASSOCIATES 23852 PACIFIC COAST HIGHWAY #311 MALIBU, CA 90265 EXAMINER
HIRL, JOSEPH P

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 07/12/2004

L	APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNET DOCKET NO.	CONFIRMATION NO.	
ſ	APPLICATION NO. FILING DATE		FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	

TITLE OF INVENTION: METHOD AND APPARATUS FOR INCORPORATING DECISION MAKING INTO CLASSIFIERS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	. \$0	\$1330	10/12/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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- II. PART B FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.
- III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Page 1 of 3

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

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INSTRUCTIONS: This for appropriate. All further cor indicated unless corrected t maintenance fee notification	m should be used for tran respondence including the selow or directed otherwise is.	smitting the ISSU Patent, advance or in Block 1, by (a	E FEE and P ders and notifi) specifying a	UBLICATION FEE (if required ication of maintenance fees new correspondence address	nired). Blocks 1 through 5 s will be mailed to the current ;; and/or (b) indicating a sepa	hould be completed where correspondence address as arate "FEE ADDRESS" for		
CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)				Note: A certificate of Fee(s) Transmittal. The papers Fach addition	Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying			
28848 75	90 07/12/2004		•	Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.				
	& ASSOCIATES OAST HIGHWAY #3 65	11		Ce I hereby certify that to States Postal Service addressed to the Ma transmitted to the US	rtificate of Mailing or Trans his Fec(s) Transmittal is bein with sufficient postage for fir il Stop ISSUE FEE address PTO (703) 746-4000, on the o	smission g deposited with the United st class mail in an envelope above, or being facsimile late indicated below.		
				Tansiniaca ao ale Cos	10 (703) 740-4000, ULI MEC	(Depositor's name)		
				***		(Signature)		
						(Date)		
APPLICATION NO.	FILING DATE		FIRST NAMED	INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.		
09/686,112	10/10/2000		Bradley C	C. Love	HRL030	4429		
TITLE OF INVENTION: M	ETHOD AND APPARATU	IS FOR INCORPO	RATING DEC	CISION MAKING INTO CLA	ASSIFIERS			
APPLN, TYPE	SMALL ENTITY	ISSUE FI	EE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE		
nonprovisional	NO	\$1330		\$0	\$1330	10/12/2004		
EXAM	INER	ART UNIT		CLASS-SUBCLASS				
HIRL, JO	OSEPH P	2121		706-020000				
 Change of correspondence address or indication of "Fee Addres CFR 1.363). Change of correspondence address (or Change of Correspond Address form PTO/SB/122) attached. "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Cus Number is required. 			2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.					
3. ASSIGNEE NAME AND	RESIDENCE DATA TO B	E PRINTED ON T	HE PATENT	(print or type)				
PLEASE NOTE: Unless recordation as set forth in	an assignee is identified by 37 CFR 3.11. Completion	elow, no assignee of this form is NO	data will apper Ta substitute fo	ar on the patent. If an assignment.	nee is identified below, the o	locument has been filed for		
(A) NAME OF ASSIGNI	EE	(В) RESIDENCE	E: (CITY and STATE OR CO	UNTRY)			
Please check the appropriate		ries (will not be pr	inted on the pa	tent); U individual U	corporation or other private g	roup entity U government		
4a. The following fee(s) are	enclosed:	46	Payment of F		-11			
☐ Issue Fee	nall entity discount nermitte	ብ	☐ A check in the amount of the fee(s) is enclosed. ☐ Payment by credit card. Form PTO-2038 is attached.					
☐ Publication Fee (No small entity discount permitted) ☐ Advance Order - # of Copies			The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to					
	•		Deposit Accor	unt Number	(enclose an extra c	opy of this form).		
5. Change in Entity Status	(from status indicated above IALL ENTITY status. See 3	•	IIb Annlican	nt is not claiming SMALL EN	TITY status. See, e.g., 37 CF	R 1 27(a)(2)		
				 				
	ublication Fee (if required) v	vill not be accepted	from anyone		ly paid issue fee to the application is the application of the attorney or agent; or the agent; or the agent is a second control of the application of the applicatio			
(Authorized Signature)		(Date)						
This collection of informatic an application. Confidentiali submitting the completed ap this form and/or suggestions Box 1450, Alexandria, Virgi	on is required by 37 CFR 1.3 ity is governed by 35 U.S.C pplication form to the USPT for reducing this burden, slinia 22313-1450. DO NOT	11. The information, 122 and 37 CFR O. Time will vary nould be sent to the SEND FEES OR C	on is required to 1.14. This colle depending upon the Chief Information COMPLETED	o obtain or retain a benefit by ection is estimated to take 12 on the individual case. Any cation Officer, U.S. Patent and FORMS TO THIS ADDRES	the public which is to file (an minutes to complete, includi- comments on the amount of ti d Trademark Office, U.S. Dep S. SEND TO: Commissioner	d by the USPTO to process) ng gathering, preparing, and me you require to complete artment of Commerce, P.O. for Patents, P.O. Box 1450,		

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,112 10/10/2000		Bradley C. Love	HRL030	4429
28848 7	590 07/12/2004	,	EXAM	INER
TOPE-MCKAY & ASSOCIATES 23852 PACIFIC COAST HIGHWAY #311			HIRL, JOSEPH P	
MALIBU, CA 90265			ART UNIT	PAPER NUMBER
			2121	17
			DATE MAILED: 07/12/2004	4

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 477 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 477 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

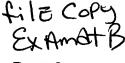
Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

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	Application No.	Applicant(s)		
Notice of Allowability	09/686,112 Examiner	LOVE, BRADLEY C. Art Unit	\frac{\fin}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}}{\frac}}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}}}}{\frac{	
	Joseph P. Hirl	2421		

Al- 4	09/686,112	LOVE, BRADLEY C.	
Notice of Allowability	Examiner	Art Unit	*
	Joseph P. Hirl	24.21	
The MAILING DATE of this communication apperature All claims being allowable, PROSECUTION ON THE MERITS IS herewith (or previously mailed), a Notice of Allowance (PTOL-85) NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIOF the Office or upon petition by the applicant. See 37 CFR 1.313	(OR REMAINS) CLOSED in this apport or other appropriate communication GHTS. This application is subject to	plication. If not included will be mailed in due cours	se. THIS he initiative
1. This communication is responsive to <u>April 26, 2004</u> .		•	
2. X The allowed claim(s) is/are <u>1-6,8-16 , 18-25, 27-28-</u> .			
3. The drawings filed on 10 October 2000 are accepted by the	e Examiner.		
 4. Acknowledgment is made of a claim for foreign priority una) a) All b) Some* c) None of the: 1. Certified copies of the priority documents have 2. Certified copies of the priority documents have 3. Copies of the certified copies of the priority documents have International Bureau (PCT Rule 17.2(a)). * Certified copies not received: Applicant has THREE MONTHS FROM THE "MAILING DATE" on noted below. Failure to timely comply will result in ABANDONM THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 	been received. been received in Application No cuments have been received in this	national stage application fr	
5. A SUBSTITUTE OATH OR DECLARATION must be submi INFORMAL PATENT APPLICATION (PTO-152) which give	itted. Note the attached EXAMINER's reason(s) why the oath or declara	S AMENDMENT or NOTIC tion is deficient.	E OF
6. CORRECTED DRAWINGS (as "replacement sheets") mus	t be submitted.		
(a) including changes required by the Notice of Draftspers	on's Patent Drawing Review (PTO-	948) attached	
1) hereto or 2) to Paper No./Mail Date		_	
(b) including changes required by the attached Examiner's Paper No./Mail Date	s Amendment / Comment or in the O	office action of	
Identifying indicia such as the application number (see 37 CFR 1. each sheet. Replacement sheet(s) should be labeled as such in the	84(c)) should be written on the drawir ne header according to 37 CFR 1.121(c	ngs in the front (not the back)) of
 DEPOSIT OF and/or INFORMATION about the depos attached Examiner's comment regarding REQUIREMENT F 	Sit of BIOLOGICAL MATERIAL IN FOR THE DEPOSIT OF BIOLOGICA	nust be submitted. Note t AL MATERIAL.	he
Attachment(s) 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08	6. 🛛 Interview Summary Paper No./Mail Dat	e <u>12</u> .)
Paper No./Mail Date			
Examiner's Comment Regarding Requirement for Deposit of Biological Material	8. ⊠ Examiner's Stateme 9. ☐ Other	nt of Reasons for Allowanc	e
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Application/Control Number: 09/686,112

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Examiner's Amendment/Reasons for Allowance

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

In the Claims

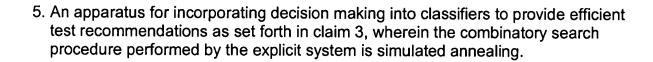
2. Change the claims in accordance with the following:

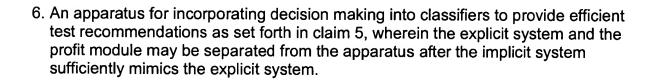
What is claimed is:

- 1. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations, the apparatus comprising:
 - a. an explicit system and a classifier each configured to receive a system state [[dataset]] <u>vector</u> the explicit system connected with the classifier and operative to iteratively perform a combinatory search procedure based on the system state [[dataset]] <u>vector</u> to develop a next test recommendation for the classifier, whereby the classifier performs the next test to generate an objective weighted score;
 - b. a profit module connected with the classifier and with the explicit system to receive the objective weighted score from the classifier, to add subjective value to the objective weighted score to determine a profit for the test, and to provide the profit to the explicit system to enable the explicit system to i. assess the value of its next test recommendation and ii. to iteratively generate a best test recommendation based on the maximization of the profit;
 - c. an implicit system configured to receive a system state [[dataset]] vector, and connected with the explicit system to receive the best test recommendation for each system state [[dataset]] vector, and to act as a function estimator to learn to associate best test recommendations with the system state [[dataset]] vector in order to mimic the explicit system, thereby to enable rapid decision making in situations that are either urgent or well-known.



- 2. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the explicit system and the implicit system are configured to provide test recommendations to a controller.
- 3. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the implicit system is a neural network.
- 4. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 3 wherein the neural network is a radial basis neural network.





7. Cancel

An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the classifier is a probabilistic model.

An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 8, wherein the classifier is Bayesian.



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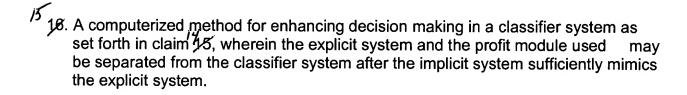
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- 9 19. A computerized method for enhancing decision making in a classifier system, wherein the classifier system includes an explicit system and a classifier, each configured to receive a system state [[dataset]] vector, with the explicit system connected with the classifier; a profit module connected with the classifier and with the explicit system; and an implicit system configured to receive a system state [[dataset]] vector, and connected with the explicit system, the computerized method comprising the steps of:
 - a. receiving a system state vector in the explicit system, the classifier, and the implicit system;
 - b. determining in the explicit system, based by the feature set, a recommended test;
 - c. performing the recommended test [[on]] by the classifier;
 - d. determining, via the profit module, the profit from the test performed [[on]] by the classifier;
 - e. detecting whether the test performed [[on]] by the classifier maximizes the profit;
 - f. performing the receiving step a. through the detecting step a until a test is found which maximizes the profit;
 - g. training the implicit system with the system state vector and the test which maximizes the profit; and
 - h. repeating steps a. through g. until a desired level of training of the implicit system is reached.
- ID1X. A computerized method for enhancing decision making in a classifier system as set forth in claim 10, wherein the test that maximizes the profit is provided by either the explicit system or the implicit system to a controller.
- 11.2. A computerized method for enhancing decision making in a classifier system as set forth in claim 10, wherein the implicit system used is a neural network.



- 12.13. A computerized method for enhancing decision making in a classifier system as set forth in claim 12, wherein the implicit system used is a radial basis neural network.
- 13 14. A computerized method for enhancing decision making in a classifier system as set forth in claim 12, wherein the determining step b. is performed by the explicit system using a combinatory search procedure.
- 1916. A computerized method for enhancing decision making in a classifier system as set forth in claim 34, wherein the combinatory search procedure performed by the explicit system in the determining step b. is simulated annealing.



17. Cancel

- 1 48. A computerized method for enhancing decision making into classifiers to provide efficient test recommendations as set forth in claim 10, wherein the classifier is a probabilistic model.
- 1718. A computerized method for enhancing decision making into classifiers to provide efficient test recommendations as set forth in claim 18, wherein the classifier is Bayesian.
- 1820. A computerized method for enhancing decision making in classifiers to provide efficient test recommendations, the computerized method comprising the steps of:

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- a. providing an explicit system and a classifier each configured to receive a system state [[dataset]] <u>vector</u>, with the explicit system connected with the classifier, and operative to iteratively perform a combinatory search procedure based on the system state [[dataset]] <u>vector</u> to develop a next test recommendation for the classifier, whereby the classifier performs the next test to generate an objective weighted score;
- b. providing a profit module connected with the classifier and with the explicit system to receive the objective weighted score from the classifier, to add subjective value to the objective weighted score to determine a profit for the test, and to provide the profit to the explicit system to enable the explicit system to assess the value of its next test recommendation, and, iteratively, to generate a best test recommendation based on the maximization of the profit;
- c. providing an implicit system configured to receive a system state [[dataset]] vector, and connected with the explicit system to receive the best test recommendation for each system state [[dataset]] vector, and to act as a function estimator to learn to associate best test recommendations with the system state [[dataset]] vector in order to mimic the explicit system, thereby to enable rapid decision making in situations that are either urgent or well-known.
- 1 2/1. A computerized method for enhancing decision making in a classifier system as set forth in claim 20, wherein the explicit system and the implicit system are further configured to provide the test recommendation to a controller.
- 20, A computerized method for enhancing decision making in a classifier system as set forth in claim 20, wherein the implicit system provided is a neural network.
- 23. A computerized method for enhancing decision making in a classifier system as set forth in claim 22, wherein the implicit system provided is a radial bias neural network.
- 24. A computerized method for enhancing decision making in a classifier system as set forth in claim 22, wherein the explicit system provided performs the combinatory search procedure by use of simulated annealing.



335. A computerized method for enhancing decision making in a classifier system as set forth in claim 24, wherein the explicit system provided and the profit module provided may be separated from the classifier system provided after the implicit system sufficiently mimics the explicit system.

26. Cancel



A computerized method for enhancing decision making in classifiers to provide efficient test recommendations as set forth in claim 20, wherein the classifier is a probabilistic model.

2628. A computerized method for enhancing decision making in classifiers to provide efficient test recommendations as set forth in claim 27, wherein the classifier is Bayesian.

Authorization for this examiner's amendment was given in a telephone interview with Cary Tope-McKay on 6/29/4 and 7/7/4.

Reasons for Allowance

- 3. Claims 1-6, 8-16, 18-25, and 27-28 are allowed.
- 4. The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fails to teach the claims invention of an explicit system and a classifier system based functionally operating on a system state vector wherein by a combinatory search procedure, a next text is

determined to establish an objective weighted score whereby a profit module transforms the weighted score into a profit and further facilitates identifying the value associated with the next test. Using the results of this analysis, an implicit system is trained that provides quick reaction but approximate solutions.

The closest prior art (LaPointe, WO 97/29447) teaches neural networks in decision-making to identify important variables to evaluated observations and test results and to suggest alternative courses of action. LaPointe fails to teach the use of explicit systems operating on a system state vector in a combinatorial search with a payoff function to determine next step action and to then develop an implicit system to support rapid decision making

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

6. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

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If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, Anthony Knight can be reached at (703) 308-3179.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of "Proposed" or "Draft" for the desk of the Examiner).

Joseph P. Hirl

July 7, 2004

Anthony Knight

Supervisory Patent Examiner

Group 3600